



QB QUADRUPOLE/SPOOL PACKAGE: Status Report and Service Description

The preliminary design of the QB model quadrupole has been completed as has fabrication of the first working prototype. The magnet and combined spool package fills a 115" slot at normal quad locations. At feed and turnaround points the spool will be assembled as an integral part of Claus Rode's service boxes, again to fill a 115" slot.

Location of key elements in this package is as per attached drawing 1620-ME-103596. Spool area services include the following:

1. 1 Phase Relief
2. 2 Phase Relief
3. LN₂ Relief
4. Insulating Vacuum Relief
5. CVI Pumpout (Insulating Vacuum)
6. 6" Conflat Pumpout (Insulating Vacuum)
7. Beam Vacuum Sniffer
8. Beam Position Monitor
9. Safety Lead (1)
10. 1 Phase Instrumentation (Thermometer, Voltage Taps)
11. Thermocouple Flanges (2) (Insulating Vacuum)
12. 10" Tuning Quad
13. Correction Element Power Leads (10)

All packages will include the above services, regardless of location. Beam position monitors will be positioned alternately to monitor vertical and horizontal off-axis displacement respectively.

Integral with the beam tube sub-assembly are three, 2-layer correction coils, 66 inches long (magnetic length). Integrated field strengths are as follows: Dipole, 98 KG-in @ 1 inch; Sextupole, 44 KG-in @ 1 inch; Octupole, 29 KG-in @ 1 inch. All field strength values are at 50 A coil current. The 10" tuning quad has a field strength of 52 KG-in @ 1 inch with a current of 59 A. Power for these elements is provided through four pairs of 50 A vapor cooled current leads. Two additional 200 A leads are provided for differential powering of the main quadrupole coil. The integrated field strength of the main coil is 1354 KG-in @ 1 inch at a current of 4527 A. The magnetic length is 68.73 inches (theoretical).

QB quadrupole design parameters are as per G. Kalbfleisch, quadrupole physicist. Coil parameters are as per S. Snowdon (12-16-77).

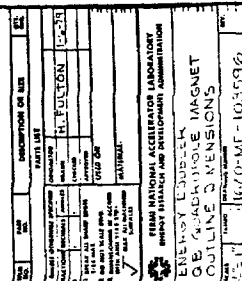
At the present, several design changes are being considered based on that experience gained in production of the prototype, 8QB2. These, however, do not affect package performance, but rather, assembly sequences and slight interferences.

Also under consideration is the addition of a vacuum isolation system with appropriate manifolding to allow isolation of the insulating vacuum for each 5-magnet string. This, to facilitate leak checking and provide back-up for insulating vacuum pumps.

T. Nicol

T. Nicol

1-8-79



NOTE
ALL DIMENSIONS APPLY AT AMBIENT TEMPERATURE